



unione petrolifera



4th AIEE ENERGY SYMPOSIUM
CURRENT AND FUTURE CHALLENGES TO ENERGY SECURITY

**LOW CARBON LIQUID FUELS AND INTERNAL
COMBUSTION ENGINES TO MEET THE TRANSITION
TARGETS AND PRESERVE THE INDUSTRIAL EXCELLENCES
IN EUROPE**

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Our objectives for mobility

- Mobility need to be guaranteed to citizens and industry;
- Mobility need to be assured at affordable costs for all;
- Mobility need to meet all environmental objectives, in particular:
 - improvement of air quality in cities for NOx and PM as quickly as possible;
 - compliance with the obligations to reduce CO2 emissions in transport by 2030 - minus 33% versus 2005;
 - compliance with the obligations to reduce CO2 emissions in transport to 2050 - minus 60% versus 1990
- In doing so we need to preserve the automotive industrial excellences and the whole economy in Italy and in Europe

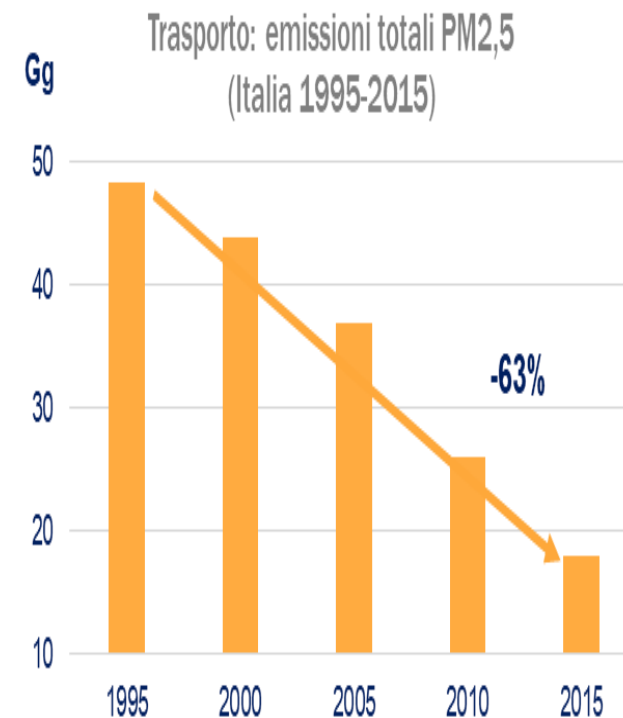
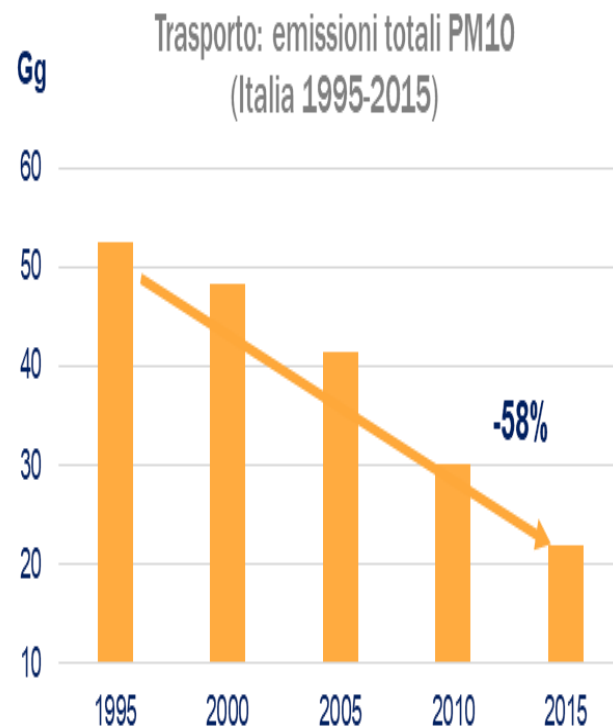
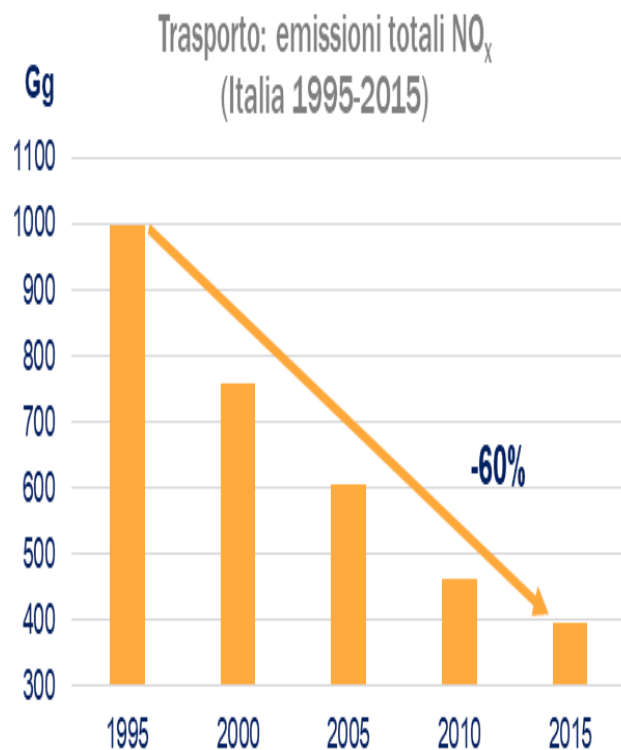


What's today situation and effects of transport?

- Today the demand of mobility in all sectors of transport is easily met and the automotive industry is the key of Italian and European economy
- An improvement of transport's environmental impact has also been detected even if:
 - Cities still experience pollution hotspots and air quality limit exceedances and so further action is needed
 - The GHG emissions reduction seems to be too slow
- The continuous improvement of air quality in Italy and Europe is mainly linked to a combination of:
 - cars and heavy duty fleets turnover and...
 - an extraordinary reduction of exhaust emissions of modern vehicles both passenger and commercial



The transport emissions improvement in Italy



Fonte: Ispra (2017), «Annuario dei dati ambientali»

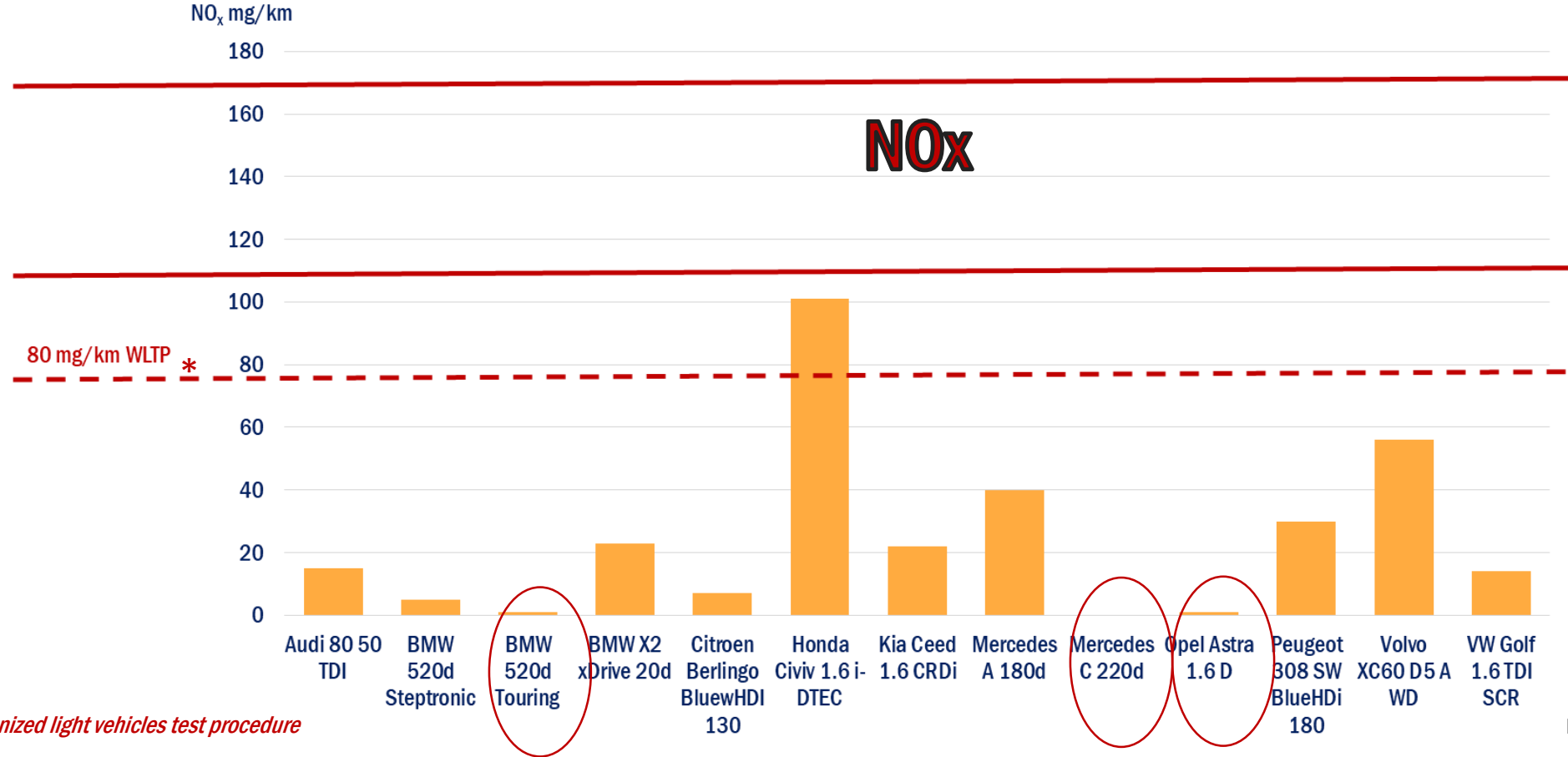


Today data on air quality in Italy

- The Report “MOBILITARIA 2019” certifies a **general improvement** in air quality in Italian cities
- A **marked NO₂ reduction** in general and also in cities of the Po Basin
- **In 2018, no city exceeds** the hourly limits for NO₂
- In Rome, Milan and Turin, the NO₂ average annual value of 40 micrograms/m³ is slightly exceeded, but **constantly improving** compared to previous years.
- For PM10 and PM2.5 **all cities are below** the average annual limits
- The exceedances of PM10 daily limits in different cities remains critical, but **this pollution is only marginally linked to traffic**



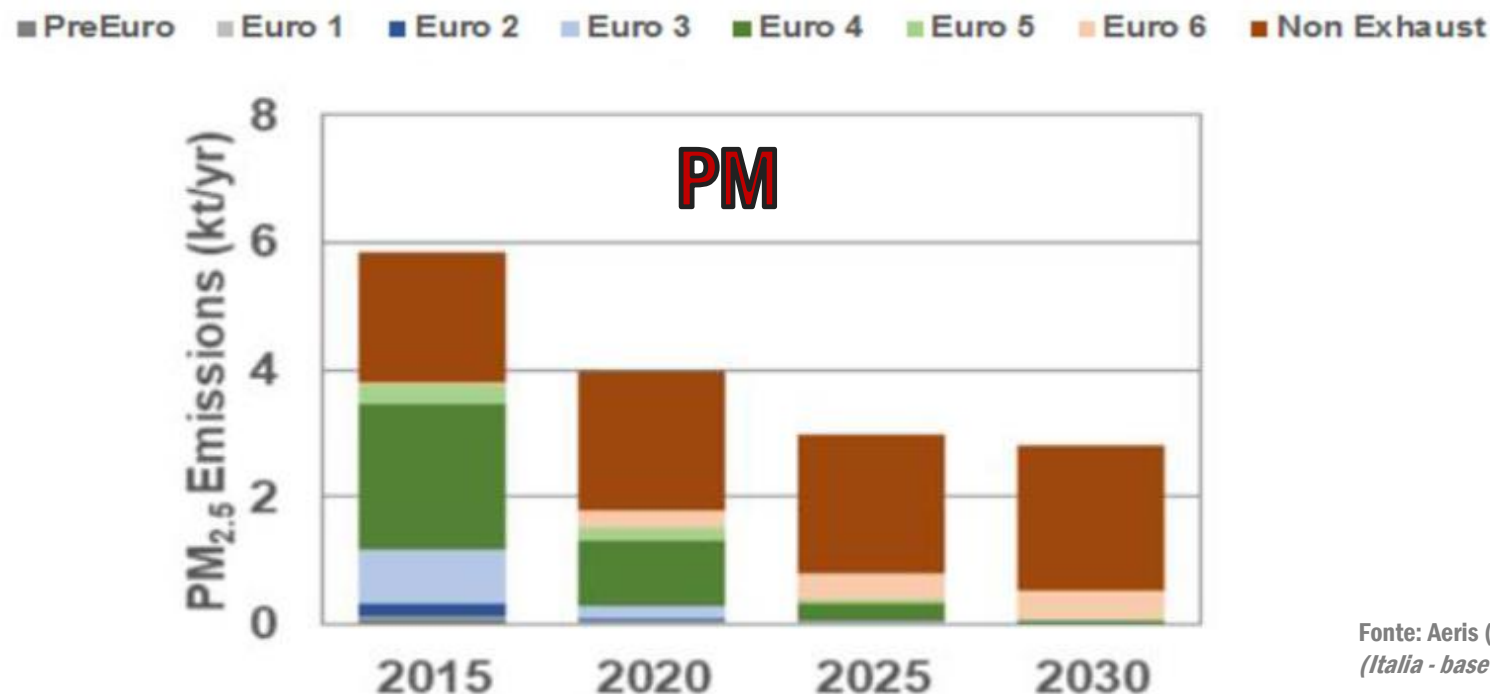
The latest generation diesel cars emissions (Euro 6/d)



The most recent RDE tests (February 2019) show that different models have NO_x emissions close to zero
The limits set by the European WLTP-RDE regulation are widely respected



The latest generation diesel cars emissions (Euro 6/d)



Fonte: Aeris (2017), «Urban air quality study»
(Italia - base case scenario)

The technological evolution of diesel engines (Euro 6/d-RDE) allows PM_{2.5} emissions to be reduced to negligible values

Non-exhaust particulate emissions from all cars are much higher than those at tail pipe affected

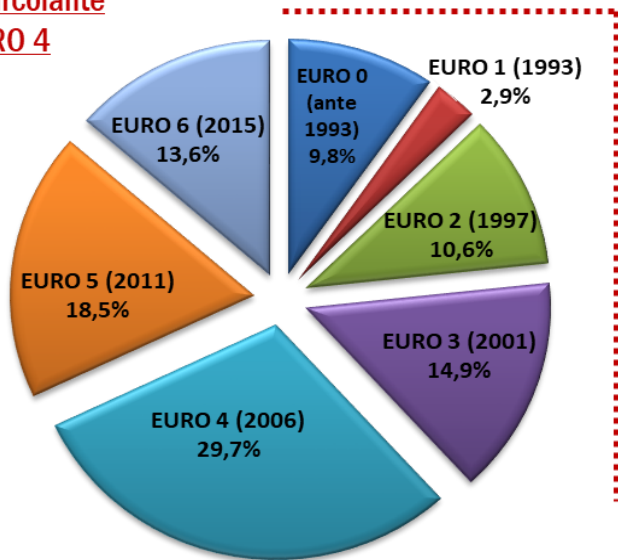
Traffic contribution at PM air concentration is very small versus emissions from stationary sources



The CO₂ Italian target compliance at 2030

The effect of cars fleet natural turnover

38% parco circolante
ante EURO 4



Data from UP, Anfia and ACI

Riduzione emissioni medie CO₂ parco circolante (2005-2030)

| | Anno 2005: 31,6 milioni di vetture | | Anno 2015: 33,7 milioni di vetture | | Anno 2030: 33,7 milioni di vetture | | Anno 2030: 33,7 milioni di vetture (new) | |
|------------------|------------------------------------|---------------------------------|------------------------------------|---------------------------------|------------------------------------|---|--|---|
| | % ripartizione parco | stima emissioni CO ₂ | % ripartizione parco | stima emissioni CO ₂ | % ripartizione parco | stima emissioni CO ₂ | % ripartizione parco | stima emissioni CO ₂ |
| Euro 0 | 23% | | 11% | | -- | | | |
| Euro 1 | 23% | | 4% | | -- | | | |
| Euro 2 | 26% | | 13% | 170 g/km | -- | | | |
| Euro 3 | 34% | | 17% | | -- | | | |
| Euro 4 | -- | | 32% | | | | | |
| Euro 5 | | | 20% | | 11% | 140 g/km | 11% | 140 g/km |
| Euro 6 | | | 3% | 140 g/km | 30% | 120 g/km | 30% | 120 g/km |
| Post Euro 6 | | | -- | | 59% | 94,2 g/km | 29% | 94,2 g/km |
| Post 2025 Euro 6 | | | | | | | 30% | 80,5 g/km |
| | | 170 g/km | | 159,2 g/km | | 106,9 g/km emissioni medie -37% var. rispetto a 2005 | | 102,8 g/km emissioni medie -40% var. rispetto a 2005 |

What do we need?

- It's very clear that **the only and very effective solution** is the **fastest turnover of the passenger and heavy duty fleets** with Euro 6/d and Euro VI vehicles. With this measure we can achieve:
 - *The **fastest reduction** of NO2 and Particulate concentration in all cities*
 - *The **full compliance** of CO2 emissions reduction target at 2030 for Italy*
 - *The **same level of mobility** for passengers and goods as today at **sustainable costs** for consumers and businesses*
 - *The **same logistic infrastructure and distribution network** as today to supply any vehicles, even in the most remote area, **without any additional investment**;*
 - *To **preserve the current industrial excellence** of the European automotive industry*
 - *To **avoid the GDP's reduction** currently registered in Europe linked with the automotive crisis*



What do we don't need? (1/2)

- We absolutely don't need the European CO₂ emission standards for car and heavy duty recently adopted. They will be able to create several and dramatic collateral effects in Europe
 1. *For an internal combustion engine is technically impossible to meet these limits*
 2. *They adopt a very unfair tank-to-wheel approach that don't take into account the CO₂ emissions associated with the production of the energy used by the vehicle*
 3. *They are imposing by law the electric cars being the only vehicle able to emit zero CO₂ at tail pipe and in doing so they are betraying the technological neutrality*
 4. *They are imposing by law a kind of mobility very costly and highly immature that only a small niche of wealthy people can afford*
 5. *They don't need to meet the 2030 CO₂ target for Europe and by the way the cost of ton of CO₂ removed in this way is extremely high: 600 – 800 €/ton CO₂ removed*
 6. *They will slow down seriously, also the air quality improvement pace. Only with huge incentives like in China and Norway or if imposed by law like in EU, electro mobility will slowly grow.*



What do we don't need? (2/2)

- We absolutely don't need the European CO2 emission standards for car and heavy duty recently adopted. They will be able to create dramatic collateral effects in Europe
 7. *With a number of registered cars around 10.000/year the electric cars will take tents of years before reaching concrete environmental results. High purchase price, limited autonomy, limited charging points, charging time, battery life, raw materials availability and costs, internal and external safety systems and faster depreciation make electro mobility still highly immature.*
 8. *They need a totally new infrastructure of charging points and enormous investments to update the electric grid*
 9. *The main components of electric cars are produced in China, not only batteries but also electric engines and inverters...80% of electric cars. No way EU could compete with labor costs and raw materials availability of China...China will dominate the electro mobility industries*
 10. *They are only giving a massive advantage at Chinese industries destroying the current industrial excellence of the European automotive industry and cut millions of jobs*
 11. *They will also impact dramatically on the overall European economy and we have already observed the first effects*



What do we need in long term?

- A transition from predominantly oil-based products to low or zero carbon intensity liquid fuels (green hydrogen + CO₂ from atmosphere = e-fuels) and sustainable biofuels. They allow:
 - *To reduce emissions of all vehicles in circulation immediately, enabling a wider GHG reduction compared to the usual fleet renewal scenario*
 - *Full utilization of existing infrastructure from refineries to service stations without any additional investment*
 - *To decarbonize other transport segments such as Aviation, Marine and Heavy Duty road transport*
 - *To confirms Europe as a global leader on ICE technologies maintaining the European industrial system*
 - *The opportunity to export technologies to the rest of the world avoiding any dependence from China*
- An appropriate regulatory framework is necessary for European refining industry to remain competitive and to develop the investments necessary for the implementation of innovative technologies. The regulatory approach need to be based on technological neutrality to allow all potential technologies to contribute to meet the environmental targets



Main conclusions

1. To remove and correct the Tank-to-Wheel current approach of the European vehicle emissions standards toward an approach based on Well-to-Wheel
2. To implement measures addressed to a fast vehicles fleets renewal that allows a rapid air quality improvement in cities while meeting the climate targets at 2030
3. To adopt a policy framework and a regulatory system to safeguard the European refining competitiveness to allow the development of necessary investments to implement innovative technologies.
4. To maintain after 2030 a regulatory approach based on technological neutrality to allow all potential technologies to contribute to meet the long term environmental targets
5. To ensure refinery and low-carbon liquid fuels are included in the EU's industrial and technology strategies

This is the only way to meet all the short and long term environmental targets in all transport segments, to assure the right mobility to citizens and goods at affordable costs and to preserve our industrial excellences and the whole economy in Europe



THANK YOU FOR YOUR ATTENTION

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